

## SEQUENCE LISTING

<110> National Cardiovascular Center

5 <120> A specific substrate and a method for determining activity of von Willebrand factor cleaving enzyme

<130>

10 <160> 12

<210> 1

<211> 2813

<212> PRT

15 <213> Homo sapiens

<400> 1

Met Ile Pro Ala Arg Phe Ala Gly Val Leu Leu Ala Leu Ala Leu Ile

1 5 10 15

20 Leu Pro Gly Thr Leu Cys Ala Glu Gly Thr Arg Gly Arg Ser Ser Thr

20 25 30

Ala Arg Cys Ser Leu Phe Gly Ser Asp Phe Val Asn Thr Phe Asp Gly

35 40 45

Ser Met Tyr Ser Phe Ala Gly Tyr Cys Ser Tyr Leu Leu Ala Gly Gly

25 50 55 60

Cys Gln Lys Arg Ser Phe Ser Ile Ile Gly Asp Phe Gln Asn Gly Lys

65 70 75 80

Arg Val Ser Leu Ser Val Tyr Leu Gly Glu Phe Phe Asp Ile His Leu

85 90 95

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	Phe	Val	Asn	Gly	Thr	Val	Thr	Gln	Gly	Asp	Gln	Arg	Val	Ser	Met	Pro
				100					105						110	
	Tyr	Ala	Ser	Lys	Gly	Leu	Tyr	Leu	Glu	Thr	Glu	Ala	Gly	Tyr	Tyr	Lys
				115					120						125	
5	Leu	Ser	Gly	Glu	Ala	Tyr	Gly	Phe	Val	Ala	Arg	Ile	Asp	Gly	Ser	Gly
				130					135						140	
	Asn	Phe	Gln	Val	Leu	Leu	Ser	Asp	Arg	Tyr	Phe	Asn	Lys	Thr	Cys	Gly
	145					150					155					160
	Leu	Cys	Gly	Asn	Phe	Asn	Ile	Phe	Ala	Glu	Asp	Asp	Phe	Met	Thr	Gln
10				165						170					175	
	Glu	Gly	Thr	Leu	Thr	Ser	Asp	Pro	Tyr	Asp	Phe	Ala	Asn	Ser	Trp	Ala
				180						185					190	
	Leu	Ser	Ser	Gly	Glu	Gln	Trp	Cys	Glu	Arg	Ala	Ser	Pro	Pro	Ser	Ser
				195					200						205	
15	Ser	Cys	Asn	Ile	Ser	Ser	Gly	Glu	Met	Gln	Lys	Gly	Leu	Trp	Glu	Gln
				210					215						220	
	Cys	Gln	Leu	Leu	Lys	Ser	Thr	Ser	Val	Phe	Ala	Arg	Cys	His	Pro	Leu
	225					230					235					240
	Val	Asp	Pro	Glu	Pro	Phe	Val	Ala	Leu	Cys	Glu	Lys	Thr	Leu	Cys	Glu
20				245						250					255	
	Cys	Ala	Gly	Gly	Leu	Glu	Cys	Ala	Cys	Pro	Ala	Leu	Leu	Glu	Tyr	Ala
				260						265					270	
	Arg	Thr	Cys	Ala	Gln	Glu	Gly	Met	Val	Leu	Tyr	Gly	Trp	Thr	Asp	His
				275						280					285	
25	Ser	Ala	Cys	Ser	Pro	Val	Cys	Pro	Ala	Gly	Met	Glu	Tyr	Arg	Gln	Cys
				290					295						300	
	Val	Ser	Pro	Cys	Ala	Arg	Thr	Cys	Gln	Ser	Leu	His	Ile	Asn	Glu	Met
	305					310					315					320
	Cys	Gln	Glu	Arg	Cys	Val	Asp	Gly	Cys	Ser	Cys	Pro	Glu	Gly	Gln	Leu

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	325	330	335
	Leu Asp Glu Gly Leu Cys Val Glu Ser Thr Glu Cys Pro Cys Val His		
	340	345	350
	Ser Gly Lys Arg Tyr Pro Pro Gly Thr Ser Leu Ser Arg Asp Cys Asn		
5	355	360	365
	Thr Cys Ile Cys Arg Asn Ser Gln Trp Ile Cys Ser Asn Glu Glu Cys		
	370	375	380
	Pro Gly Glu Cys Leu Val Thr Gly Gln Ser His Phe Lys Ser Phe Asp		
	385	390	395
10	Asn Arg Tyr Phe Thr Phe Ser Gly Ile Cys Gln Tyr Leu Leu Ala Arg		
	405	410	415
	Asp Cys Gln Asp His Ser Phe Ser Ile Val Ile Glu Thr Val Gln Cys		
	420	425	430
	Ala Asp Asp Arg Asp Ala Val Cys Thr Arg Ser Val Thr Val Arg Leu		
15	435	440	445
	Pro Gly Leu His Asn Ser Leu Val Lys Leu Lys His Gly Ala Gly Val		
	450	455	460
	Ala Met Asp Gly Gln Asp Val Gln Leu Pro Leu Leu Lys Gly Asp Leu		
	465	470	475
20	Arg Ile Gln His Thr Val Thr Ala Ser Val Arg Leu Ser Tyr Gly Glu		
	485	490	495
	Asp Leu Gln Met Asp Trp Asp Gly Arg Gly Arg Leu Leu Val Lys Leu		
	500	505	510
	Ser Pro Val Tyr Ala Gly Lys Thr Cys Gly Leu Cys Gly Asn Tyr Asn		
25	515	520	525
	Gly Asn Gln Gly Asp Asp Phe Leu Thr Pro Ser Gly Leu Ala Glu Pro		
	530	535	540
	Arg Val Glu Asp Phe Gly Asn Ala Trp Lys Leu His Gly Asp Cys Gln		
	545	550	555
			560

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Asp Leu Gln Lys Gln His Ser Asp Pro Cys Ala Leu Asn Pro Arg Met

575

Thr Arg Phe Ser Glu Glu Ala Cys Ala Val Leu Thr Ser Pro Thr Phe

590

5      Glu Ala Cys His Arg Ala Val Ser Pro Leu Pro Tyr Leu Arg Asn Cys

605

Arg Tyr Asp Val Cys Ser Cys Ser Asp Gly Arg Glu Cys Leu Cys Gly

620

Ala Leu Ala Ser Tyr Ala Ala Ala Cys Ala Gly Arg Gly Val Arg Val

640

Ala Trp Arg Glu Pro Gly Arg Cys Glu Leu Asn Cys Pro Lys Gly Gln

655

Val Tyr Leu Gln Cys Gly Thr Pro Cys Asn Leu Thr Cys Arg Ser Leu

670

15 Ser Tyr Pro Asp Glu Glu Cys Asn Glu Ala Cys Leu Glu Gly Cys Phe

685

Cys Pro Pro Gly Leu Tyr Met Asp Glu Arg Gly Asp Cys Val Pro Lys

700

Ala Gln Cys Pro Cys Tyr Tyr Asp Gly Glu Ile Phe Gln Pro Glu Asp

720

Ile Phe Ser Asp His His Thr Met Cys Tyr Cys Glu Asp Gly Phe Met

735

His Cys Thr Met Ser Gly Val Pro Gly Ser Leu Leu Pro Asp Ala Val

750

25      Leu Ser Ser Pro Leu Ser His Arg Ser Lys Arg Ser Leu Ser Cys Arg

765

Pro Pro Met Val Lys Leu Val Cys Pro Ala Asp Asn Leu Arg Ala Glu

780

Gly Leu Glu Cys Thr Lys Thr Cys Gln Asn Tyr Asp Leu Glu Cys Met

5/20

	785		790		795		800										
	Ser	Met	Gly	Cys	Val	Ser	Gly	Cys	Leu	Cys	Pro	Pro	Gly	Met	Val	Arg	
					805					810					815		
	His	Glu	Asn	Arg	Cys	Val	Ala	Leu	Glu	Arg	Cys	Pro	Cys	Phe	His	Gln	
5					820					825					830		
	Gly	Lys	Glu	Tyr	Ala	Pro	Gly	Glu	Thr	Val	Lys	Ile	Gly	Cys	Asn	Thr	
					835					840					845		
	Cys	Val	Cys	Arg	Asp	Arg	Lys	Trp	Asn	Cys	Thr	Asp	His	Val	Cys	Asp	
					850					855					860		
10	Ala	Thr	Cys	Ser	Thr	Ile	Gly	Met	Ala	His	Tyr	Leu	Thr	Phe	Asp	Gly	
	865									870					875		880
	Leu	Lys	Tyr	Leu	Phe	Pro	Gly	Glu	Cys	Gln	Tyr	Val	Leu	Val	Gln	Asp	
					885					890					895		
	Tyr	Cys	Gly	Ser	Asn	Pro	Gly	Thr	Phe	Arg	Ile	Leu	Val	Gly	Asn	Lys	
15					900					905					910		
	Gly	Cys	Ser	His	Pro	Ser	Val	Lys	Cys	Lys	Lys	Arg	Val	Thr	Ile	Leu	
					915					920					925		
	Val	Glu	Gly	Gly	Glu	Ile	Glu	Leu	Phe	Asp	Gly	Glu	Val	Asn	Val	Lys	
					930					935					940		
20	Arg	Pro	Met	Lys	Asp	Glu	Thr	His	Phe	Glu	Val	Val	Glu	Ser	Gly	Arg	
	945									950					955		960
	Tyr	Ile	Ile	Leu	Leu	Leu	Gly	Lys	Ala	Leu	Ser	Val	Val	Trp	Asp	Arg	
					965					970					975		
	His	Leu	Ser	Ile	Ser	Val	Val	Leu	Lys	Gln	Thr	Tyr	Gln	Glu	Lys	Val	
25																	
					980					985					990		
	Cys	Gly	Leu	Cys	Gly	Asn	Phe	Asp	Gly	Ile	Gln	Asn	Asn	Asp	Leu	Thr	
					995					1000					1005		
	Ser	Ser	Asn	Leu	Gln	Val	Glu	Glu	Asp	Pro	Val	Asp	Phe	Gly	Asn	Ser	
					1010					1015					1020		

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	Trp Lys Val Ser Ser Gln Cys Ala Asp Thr Arg Lys Val Pro Leu Asp
	1025                      1030                      1035                      1040
	Ser Ser Pro Ala Thr Cys His Asn Asn Ile Met Lys Gln Thr Met Val
	1045                      1050                      1055
5	Asp Ser Ser Cys Arg Ile Leu Thr Ser Asp Val Phe Gln Asp Cys Asn
	1060                      1065                      1070
	Lys Leu Val Asp Pro Glu Pro Tyr Leu Asp Val Cys Ile Tyr Asp Thr
	1075                      1080                      1085
	Cys Ser Cys Glu Ser Ile Gly Asp Cys Ala Cys Phe Cys Asp Thr Ile
10	1090                      1095                      1100
	Ala Ala Tyr Ala His Val Cys Ala Gln His Gly Lys Val Val Thr Trp
	1105                      1110                      1115                      1120
	Arg Thr Ala Thr Leu Cys Pro Gln Ser Cys Glu Glu Arg Asn Leu Arg
	1125                      1130                      1135
15	Glu Asn Gly Tyr Glu Cys Glu Trp Arg Tyr Asn Ser Cys Ala Pro Ala
	1140                      1145                      1150
	Cys Gln Val Thr Cys Gln His Pro Glu Pro Leu Ala Cys Pro Val Gln
	1155                      1160                      1165
	Cys Val Glu Gly Cys His Ala His Cys Pro Pro Gly Lys Ile Leu Asp
20	1170                      1175                      1180
	Glu Leu Leu Gln Thr Cys Val Asp Pro Glu Asp Cys Pro Val Cys Glu
	1185                      1190                      1195                      1200
	Val Ala Gly Arg Arg Phe Ala Ser Gly Lys Lys Val Thr Leu Asn Pro
	1205                      1210                      1215
25	Ser Asp Pro Glu His Cys Gln Ile Cys His Cys Asp Val Val Asn Leu
	1220                      1225                      1230
	Thr Cys Glu Ala Cys Gln Glu Pro Gly Gly Leu Val Val Pro Pro Thr
	1235                      1240                      1245
	Asp Ala Pro Val Ser Pro Thr Thr Leu Tyr Val Glu Asp Ile Ser Glu

	1250	1255	1260
	Pro Pro Leu His Asp Phe Tyr Cys Ser Arg Leu Leu Asp Leu Val Phe		
	1265	1270	1275 1280
	Leu Leu Asp Gly Ser Ser Arg Leu Ser Glu Ala Glu Phe Glu Val Leu		
5	1285	1290	1295
	Lys Ala Phe Val Val Asp Met Met Glu Arg Leu Arg Ile Ser Gln Lys		
	1300	1305	1310
	Trp Val Arg Val Ala Val Val Glu Tyr His Asp Gly Ser His Ala Tyr		
	1315	1320	1325
10	Ile Gly Leu Lys Asp Arg Lys Arg Pro Ser Glu Leu Arg Arg Ile Ala		
	1330	1335	1340
	Ser Gln Val Lys Tyr Ala Gly Ser Gln Val Ala Ser Thr Ser Glu Val		
	1345	1350	1355 1360
	Leu Lys Tyr Thr Leu Phe Gln Ile Phe Ser Lys Ile Asp Arg Pro Glu		
15	1365	1370	1375
	Ala Ser Arg Ile Ala Leu Leu Leu Met Ala Ser Gln Glu Pro Gln Arg		
	1380	1385	1390
	Met Ser Arg Asn Phe Val Arg Tyr Val Gln Gly Leu Lys Lys Lys Lys		
	1395	1400	1405
20	Val Ile Val Ile Pro Val Gly Ile Gly Pro His Ala Asn Leu Lys Gln		
	1410	1415	1420
	Ile Arg Leu Ile Glu Lys Gln Ala Pro Glu Asn Lys Ala Phe Val Leu		
	1425	1430	1435 1440
	Ser Ser Val Asp Glu Leu Glu Gln Gln Arg Asp Glu Ile Val Ser Tyr		
25	1445	1450	1455
	Leu Cys Asp Leu Ala Pro Glu Ala Pro Pro Pro Thr Leu Pro Pro His		
	1460	1465	1470
	Met Ala Gln Val Thr Val Gly Pro Gly Leu Leu Gly Val Ser Thr Leu		
	1475	1480	1485

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	Gly Pro Lys Arg Asn Ser Met Val Leu Asp Val Ala Phe Val Leu Glu	
	1490	1495 1500
	Gly Ser Asp Lys Ile Gly Glu Ala Asp Phe Asn Arg Ser Lys Glu Phe	
	1505	1510 1515 1520
5	Met Glu Glu Val Ile Gln Arg Met Asp Val Gly Gln Asp Ser Ile His	
	1525	1530 1535
	Val Thr Val Leu Gln Tyr Ser Tyr Met Val Thr Val Glu Tyr Pro Phe	
	1540	1545 1550
	Ser Glu Ala Gln Ser Lys Gly Asp Ile Leu Gln Arg Val Arg Glu Ile	
10	1555	1560 1565
	Arg Tyr Gln Gly Gly Asn Arg Thr Asn Thr Gly Leu Ala Leu Arg Tyr	
	1570	1575 1580
	Leu Ser Asp His Ser Phe Leu Val Ser Gln Gly Asp Arg Glu Gln Ala	
	1585	1590 1595 1600
15	Pro Asn Leu Val Tyr Met Val Thr Gly Asn Pro Ala Ser Asp Glu Ile	
	1605	1610 1615
	Lys Arg Leu Pro Gly Asp Ile Gln Val Val Pro Ile Gly Val Gly Pro	
	1620	1625 1630
	Asn Ala Asn Val Gln Glu Leu Glu Arg Ile Gly Trp Pro Asn Ala Pro	
20	1635	1640 1645
	Ile Leu Ile Gln Asp Phe Glu Thr Leu Pro Arg Glu Ala Pro Asp Leu	
	1650	1655 1660
	Val Leu Gln Arg Cys Cys Ser Gly Glu Gly Leu Gln Ile Pro Thr Leu	
	1665	1670 1675 1680
25	Ser Pro Ala Pro Asp Cys Ser Gln Pro Leu Asp Val Ile Leu Leu Leu	
	1685	1690 1695
	Asp Gly Ser Ser Ser Phe Pro Ala Ser Tyr Phe Asp Glu Met Lys Ser	
	1700	1705 1710
	Phe Ala Lys Ala Phe Ile Ser Lys Ala Asn Ile Gly Pro Arg Leu Thr	



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	1715	1720	1725	
	Gln Val Ser Val Leu Gln Tyr Gly Ser Ile Thr Thr Ile Asp Val Pro			
	1730	1735	1740	
	Trp Asn Val Val Pro Glu Lys Ala His Leu Leu Ser Leu Val Asp Val			
5	1745	1750	1755	1760
	Met Gln Arg Glu Gly Gly Pro Ser Gln Ile Gly Asp Ala Leu Gly Phe			
	1765	1770	1775	
	Ala Val Arg Tyr Leu Thr Ser Glu Met His Gly Ala Arg Pro Gly Ala			
	1780	1785	1790	
10	Ser Lys Ala Val Val Ile Leu Val Thr Asp Val Ser Val Asp Ser Val			
	1795	1800	1805	
	Asp Ala Ala Ala Asp Ala Ala Arg Ser Asn Arg Val Thr Val Phe Pro			
	1810	1815	1820	
	Ile Gly Ile Gly Asp Arg Tyr Asp Ala Ala Gln Leu Arg Ile Leu Ala			
15	1825	1830	1835	1840
	Gly Pro Ala Gly Asp Ser Asn Val Val Lys Leu Gln Arg Ile Glu Asp			
	1845	1850	1855	
	Leu Pro Thr Met Val Thr Leu Gly Asn Ser Phe Leu His Lys Leu Cys			
	1860	1865	1870	
20	Ser Gly Phe Val Arg Ile Cys Met Asp Glu Asp Gly Asn Glu Lys Arg			
	1875	1880	1885	
	Pro Gly Asp Val Trp Thr Leu Pro Asp Gln Cys His Thr Val Thr Cys			
	1890	1895	1900	
	Gln Pro Asp Gly Gln Thr Leu Leu Lys Thr His Arg Val Asn Cys Asp			
25	1905	1910	1915	1920
	Arg Gly Leu Arg Pro Ser Cys Pro Asn Ser Gln Ser Pro Val Lys Val			
	1925	1930	1935	
	Glu Glu Thr Cys Gly Cys Arg Trp Thr Cys Pro Cys Val Cys Thr Gly			
	1940	1945	1950	

10/20

	Ser Ser Thr Arg His Ile Val Thr Phe Asp Gly Gln Asn Phe Lys Leu
	1955 1960 1965
	Thr Gly Ser Cys Ser Tyr Val Leu Phe Gln Asn Lys Glu Gln Asp Leu
	1970 1975 1980
5	Glu Val Ile Leu His Asn Gly Ala Cys Ser Pro Gly Ala Arg Gln Gly
	1985 1990 1995 2000
	Cys Met Lys Ser Ile Glu Val Lys His Ser Ala Leu Ser Val Glu Leu
	2005 2010 2015
	His Ser Asp Met Glu Val Thr Val Asn Gly Arg Leu Val Ser Val Pro
10	2020 2025 2030
	Tyr Val Gly Gly Asn Met Glu Val Asn Val Tyr Gly Ala Ile Met His
	2035 2040 2045
	Glu Val Arg Phe Asn His Leu Gly His Ile Phe Thr Phe Thr Pro Gln
	2050 2055 2060
15	Asn Asn Glu Phe Gln Leu Gln Leu Ser Pro Lys Thr Phe Ala Ser Lys
	2065 2070 2075 2080
	Thr Tyr Gly Leu Cys Gly Ile Cys Asp Glu Asn Gly Ala Asn Asp Phe
	2085 2090 2095
	Met Leu Arg Asp Gly Thr Val Thr Thr Asp Trp Lys Thr Leu Val Gln
20	2100 2105 2110
	Glu Trp Thr Val Gln Arg Pro Gly Gln Thr Cys Gln Pro Ile Leu Glu
	2115 2120 2125
	Glu Gln Cys Leu Val Pro Asp Ser Ser His Cys Gln Val Leu Leu Leu
	2130 2135 2140
25	Pro Leu Phe Ala Glu Cys His Lys Val Leu Ala Pro Ala Thr Phe Tyr
	2145 2150 2155 2160
	Ala Ile Cys Gln Gln Asp Ser Cys His Gln Glu Gln Val Cys Glu Val
	2165 2170 2175
	Ile Ala Ser Tyr Ala His Leu Cys Arg Thr Asn Gly Val Cys Val Asp

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	2180	2185	2190
	Trp Arg Thr Pro Asp Phe Cys Ala Met Ser Cys Pro Pro Ser Leu Val		
	2195	2200	2205
	Tyr Asn His Cys Glu His Gly Cys Pro Arg His Cys Asp Gly Asn Val		
5	2210	2215	2220
	Ser Ser Cys Gly Asp His Pro Ser Glu Gly Cys Phe Cys Pro Pro Asp		
	2225	2230	2235
	Lys Val Met Leu Glu Gly Ser Cys Val Pro Glu Glu Ala Cys Thr Gln		
	2245	2250	2255
10	Cys Ile Gly Glu Asp Gly Val Gln His Gln Phe Leu Glu Ala Trp Val		
	2260	2265	2270
	Pro Asp His Gln Pro Cys Gln Ile Cys Thr Cys Leu Ser Gly Arg Lys		
	2275	2280	2285
	Val Asn Cys Thr Thr Gln Pro Cys Pro Thr Ala Lys Ala Pro Thr Cys		
15	2290	2295	2300
	Gly Leu Cys Glu Val Ala Arg Leu Arg Gln Asn Ala Asp Gln Cys Cys		
	2305	2310	2315
	Pro Glu Tyr Glu Cys Val Cys Asp Pro Val Ser Cys Asp Leu Pro Pro		
	2325	2330	2335
20	Val Pro His Cys Glu Arg Gly Leu Gln Pro Thr Leu Thr Asn Pro Gly		
	2340	2345	2350
	Glu Cys Arg Pro Asn Phe Thr Cys Ala Cys Arg Lys Glu Glu Cys Lys		
	2355	2360	2365
	Arg Val Ser Pro Pro Ser Cys Pro Pro His Arg Leu Pro Thr Leu Arg		
25	2370	2375	2380
	Lys Thr Gln Cys Cys Asp Glu Tyr Glu Cys Ala Cys Asn Cys Val Asn		
	2385	2390	2395
	Ser Thr Val Ser Cys Pro Leu Gly Tyr Leu Ala Ser Thr Ala Thr Asn		
	2405	2410	2415

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	Asp Cys Gly Cys Thr Thr Thr Thr Cys Leu Pro Asp Lys Val Cys Val	
	2420	2425 2430
	His Arg Ser Thr Ile Tyr Pro Val Gly Gln Phe Trp Glu Glu Gly Cys	
	2435	2440 2445
5	Asp Val Cys Thr Cys Thr Asp Met Glu Asp Ala Val Met Gly Leu Arg	
	2450	2455 2460
	Val Ala Gln Cys Ser Gln Lys Pro Cys Glu Asp Ser Cys Arg Ser Gly	
	2465	2470 2475 2480
	Phe Thr Tyr Val Leu His Glu Gly Glu Cys Cys Gly Arg Cys Leu Pro	
10	2485	2490 2495
	Ser Ala Cys Glu Val Val Thr Gly Ser Pro Arg Gly Asp Ser Gln Ser	
	2500	2505 2510
	Ser Trp Lys Ser Val Gly Ser Gln Trp Ala Ser Pro Glu Asn Pro Cys	
	2515	2520 2525
15	Leu Ile Asn Glu Cys Val Arg Val Lys Glu Glu Val Phe Ile Gln Gln	
	2530	2535 2540
	Arg Asn Val Ser Cys Pro Gln Leu Glu Val Pro Val Cys Pro Ser Gly	
	2545	2550 2555 2560
	Phe Gln Leu Ser Cys Lys Thr Ser Ala Cys Cys Pro Ser Cys Arg Cys	
20	2565	2570 2575
	Glu Arg Met Glu Ala Cys Met Leu Asn Gly Thr Val Ile Gly Pro Gly	
	2580	2585 2590
	Lys Thr Val Met Ile Asp Val Cys Thr Thr Cys Arg Cys Met Val Gln	
	2595	2600 2605
25	Val Gly Val Ile Ser Gly Phe Lys Leu Glu Cys Arg Lys Thr Thr Cys	
	2610	2615 2620
	Asn Pro Cys Pro Leu Gly Tyr Lys Glu Glu Asn Asn Thr Gly Glu Cys	
	2625	2630 2635 2640
	Cys Gly Arg Cys Leu Pro Thr Ala Cys Thr Ile Gln Leu Arg Gly Gly	

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	2645	2650	2655	
	Gln Ile Met Thr Leu Lys Arg Asp Glu Thr Leu Gln Asp Gly Cys Asp			
	2660	2665	2670	
	Thr His Phe Cys Lys Val Asn Glu Arg Gly Glu Tyr Phe Trp Glu Lys			
5	2675	2680	2685	
	Arg Val Thr Gly Cys Pro Pro Phe Asp Glu His Lys Cys Leu Ala Glu			
	2690	2695	2700	
	Gly Gly Lys Ile Met Lys Ile Pro Gly Thr Cys Cys Asp Thr Cys Glu			
	2705	2710	2715	2720
10	Glu Pro Glu Cys Asn Asp Ile Thr Ala Arg Leu Gln Tyr Val Lys Val			
	2725	2730	2735	
	Gly Ser Cys Lys Ser Glu Val Glu Val Asp Ile His Tyr Cys Gln Gly			
	2740	2745	2750	
	Lys Cys Ala Ser Lys Ala Met Tyr Ser Ile Asp Ile Asn Asp Val Gln			
15	2755	2760	2765	
	Asp Gln Cys Ser Cys Cys Ser Pro Thr Arg Thr Glu Pro Met Gln Val			
	2770	2775	2780	
	Ala Leu His Cys Thr Asn Gly Ser Val Val Tyr His Glu Val Leu Asn			
	2785	2790	2795	2800
20	Ala Met Glu Cys Lys Cys Ser Pro Arg Lys Cys Ser Lys			
	2805	2810		

<210> 2

25 <211> 210

<212> PRT

<213> Homo sapiens

<400> 2

14/20

Asp Leu Ala Pro Glu Ala Pro Pro Pro Thr Leu Pro Pro His Met Ala

**1                      5                      10                      15**

Gln Val Thr Val Gly Pro Gly Leu Leu Gly Val Ser Thr Leu Gly Pro

20                      25                      30

5      Lys Arg Asn Ser Met Val Leu Asp Val Ala Phe Val Leu Glu Gly Ser

35                      40                      45

Asp Lys Ile Gly Glu Ala Asp Phe Asn Arg Ser Lys Glu Phe Met Glu

50                      55                      60

Glu Val Ile Gln Arg Met Asp Val Gly Gln Asp Ser Ile His Val Thr

10                      65                      70                      75                      80

Val Leu Gln Tyr Ser Tyr Met Val Thr Val Glu Tyr Pro Phe Ser Glu

85                      90                      95

Ala Gln Ser Lys Gly Asp Ile Leu Gln Arg Val Arg Glu Ile Arg Tyr

100                      105                      110

15      Gln Gly Gly Asn Arg Thr Asn Thr Gly Leu Ala Leu Arg Tyr Leu Ser

115                      120                      125

Asp His Ser Phe Leu Val Ser Gln Gly Asp Arg Glu Gln Ala Pro Asn

130                      135                      140

Leu Val Tyr Met Val Thr Gly Asn Pro Ala Ser Asp Glu Ile Lys Arg

20                      145                      150                      155                      160

Leu Pro Gly Asp Ile Gln Val Val Pro Ile Gly Val Gly Pro Asn Ala

165                      170                      175

Asn Val Gln Glu Leu Glu Arg Ile Gly Trp Pro Asn Ala Pro Ile Leu

180                      185                      190

25      Ile Gln Asp Phe Glu Thr Leu Pro Arg Glu Ala Pro Asp Leu Val Leu

195                      200                      205

Gln Arg

210

&lt;210&gt; 3

&lt;211&gt; 115

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

5

&lt;400&gt; 3

Glu Ala Gln Ser Lys Gly Asp Ile Leu Gln Arg Val Arg Glu Ile Arg

1 5 10 15

Tyr Gln Gly Gly Asn Arg Thr Asn Thr Gly Leu Ala Leu Arg Tyr Leu

10 20 25 30

Ser Asp His Ser Phe Leu Val Ser Gln Gly Asp Arg Glu Gln Ala Pro

35 40 45

Asn Leu Val Tyr Met Val Thr Gly Asn Pro Ala Ser Asp Glu Ile Lys

50 55 60

15 Arg Leu Pro Gly Asp Ile Gln Val Val Pro Ile Gly Val Gly Pro Asn

65 70 75 80

Ala Asn Val Gln Glu Leu Glu Arg Ile Gly Trp Pro Asn Ala Pro Ile

85 90 95

Leu Ile Gln Asp Phe Glu Thr Leu Pro Arg Glu Ala Pro Asp Leu Val

20 100 105 110

Leu Gln Arg

115

&lt;210&gt; 4

25 &lt;211&gt; 82

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;400&gt; 4

16/20

Asp His Ser Phe Leu Val Ser Gln Gly Asp Arg Glu Gln Ala Pro Asn

1 5 10 15

Leu Val Tyr Met Val Thr Gly Asn Pro Ala Ser Asp Glu Ile Lys Arg

20 25 30

5 Leu Pro Gly Asp Ile Gln Val Val Pro Ile Gly Val Gly Pro Asn Ala

35 40 45

Asn Val Gln Glu Leu Glu Arg Ile Gly Trp Pro Asn Ala Pro Ile Leu

50 55 60

Ile Gln Asp Phe Glu Thr Leu Pro Arg Glu Ala Pro Asp Leu Val Leu

10 65 70 75 80

Gln Arg

<210> 5

<211> 73

15 <212> PRT

<213> Homo sapiens

<400> 5

Asp Arg Glu Gln Ala Pro Asn Leu Val Tyr Met Val Thr Gly Asn Pro

20 1 5 10 15

Ala Ser Asp Glu Ile Lys Arg Leu Pro Gly Asp Ile Gln Val Val Pro

20 25 30

Ile Gly Val Gly Pro Asn Ala Asn Val Gln Glu Leu Glu Arg Ile Gly

35 40 45

25 Trp Pro Asn Ala Pro Ile Leu Ile Gln Asp Phe Glu Thr Leu Pro Arg

50 55 60

Glu Ala Pro Asp Leu Val Leu Gln Arg

65 70



<210> 6

<211> 64

<212> PRT

<213> Homo sapiens

5

<400> 6

Asp Arg Glu Gln Ala Pro Asn Leu Val Tyr Met Val Thr Gly Asn Pro

1 5 10 15

Ala Ser Asp Glu Ile Lys Arg Leu Pro Gly Asp Ile Gln Val Val Pro

10 20 25 30

Ile Gly Val Gly Pro Asn Ala Asn Val Gln Glu Leu Glu Arg Ile Gly

35 40 45

Trp Pro Asn Ala Pro Ile Leu Ile Gln Asp Phe Glu Thr Leu Pro Arg

50 55 60

15

<210> 7

<211> 30

<212> DNA

<213> Artificial Sequence

20

<220>

<223> A sense primer used in RT-PCR for obtaining Asp1459-Arg1668 region  
of mature human VWF subunit

25

<400> 7

cgggatccga ccttgcccct gaagcccctc 30

<210> 8

<211> 51

<212> DNA

<213> Artificial Sequence

<220>

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